

APPLICANT(S): YONA, Zvi et al.
SERIAL NO.: 09/818,575
FILED: March 28, 2001
Page 2

AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

1. (Currently Amended) Apparatus comprising:
 - an image source to produce along a common optical axis at least first and second complementary images differing in at least one optical property selected from the group consisting of polarization and wavelength;
 - relay optics having a relay optics field of view associated with said images;
 - and
 - a redirecting unit coupled to said image source to direct at least said first and second images to at least first and second different, respective, spatial regions of a reflecting unit based on said different optical property, thereby to enable viewing at least said first and second images together by an eye of a viewer as an integrated image having a field of view wider than said relay optics field of view.
2. (Previously Presented) The apparatus of claim 1, wherein said reflecting unit comprises diffractive optics formed therein.
3. (Previously Presented) The apparatus of claim 2 wherein said diffractive optics comprises binary optics.
4. (Previously Presented) The apparatus of claim 1 wherein said reflecting unit comprises diffractive optics on its inner and outer faces so to create a total zero optical power for the outer scene.
5. (Previously Presented) The apparatus of claim 1 wherein the number of said images is at least two.
6. (Previously Presented) The apparatus of claim 1, wherein said images are of different wavelength.

7. (Previously Presented) The apparatus of claim 1, wherein said images are of different polarization.
8. (Currently Amended) Apparatus comprising:
 - an image source to produce along a common optical axis at least first and second complementary images;
 - relay optics having a relay optics field of view associated with said images;
 - and
 - a redirecting unit coupled to said image source to direct at least said first and second images to at least first and second different, respective, spatial regions of a reflecting unit, thereby to enable viewing at least said first and second images together by an eye of a viewer as an integrated image having a field of view wider than said relay optics field of view,wherein said redirecting unit comprises a controllable tilting mirror.
9. (Previously Presented) The apparatus of claim 7, wherein said redirecting unit comprises a polarization selective reflecting device.
10. (Currently Amended) A helmet comprising:
 - a reflecting unit with operative connection to said helmet;
 - an image source to produce along a common optical axis at least first and second complementary images differing in at least one optical property selected from the group consisting of polarization and wavelength;
 - relay optics having a relay optics field of view associated with said images;
 - and
 - a redirecting unit coupled to said image source to direct at least said first and second images to at least first and second different, respective, spatial regions of said reflecting unit based on said different optical property, thereby to enable viewing at least said first and second images together by an eye of a viewer as an integrated image having a field of view greater than said relay optics field of view.
11. (Previously Presented) The helmet of claim 10, wherein said reflecting unit comprises diffractive optics formed therein.

12. (Previously Presented) The helmet of claim 11, wherein said diffractive optics comprises binary optics.
13. (Previously Presented) The helmet of claim 10 wherein said reflecting unit comprises diffractive optics on its outer faces so to create a total zero optical power for the outer scene.
14. (Previously Presented) The helmet of claim 10, wherein the number of said images is at least two.
15. (Previously Presented) The helmet of claim 10, wherein said images are of different wavelength.
16. (Previously Presented) The helmet of claim 10, wherein said images are of different polarization.
17. (Currently Amended) A helmet comprising:
 - a reflecting unit with operative connection to said helmet;
 - an image source to produce along a common optical axis at least first and second complementary images;
 - relay optics having a relay optics field of view associated with said images;
 - and
 - a redirecting unit coupled to said image source to direct at least said first and second images to at least first and second different, respective, spatial regions of said reflecting unit, thereby to enable viewing at least said first and second images together by an eye of a viewer as an integrated image having a field of view greater than said relay optics field of view,
 - wherein said redirecting unit comprises a controllable tilting mirror.
18. (Previously Presented) The helmet of claim 16, wherein said redirecting unit comprises a polarization selective reflecting device.
19. (Currently Amended) A method for producing a wide field of view, said method comprising:
 - producing along a common optical axis at least first and second complementary images differing in at least one optical property selected from the group consisting of polarization and wavelength;

optically transferring said complementary images [[image fractions]]
through relay optics having a relay optics field of view; and

directing at least said first and second images to at least first and second
different, respective, spatial regions of a reflecting unit based on said different
optical property to enable viewing at least said first and second images together by
an eye of a viewer as an integrated image having a field of view wider than said
relay optics field of view.

20. (Previously Presented) The apparatus of claim 2 wherein said diffractive optics comprises holograms.
21. (Previously Presented) The apparatus of claim 2 wherein said diffractive optics comprises optic-powered implemented optics.
22. (Previously Presented) The helmet of claim 11 wherein said diffractive optics comprises holograms.
23. (Previously Presented) The helmet of claim 11 wherein said diffractive optics comprises optic-powered implemented optics.
24. (Previously Presented) The apparatus of claim 6, wherein said redirecting unit comprises a wavelength selective reflecting device.
25. (Currently Amended) The apparatus of claim 1 wherein ~~said at least~~ said first and second different respective spatial regions of said reflecting unit are adjacent to each other ~~complementary images are substantially non-overlapping~~.
26. (Previously Presented) The apparatus of claim 1 wherein said image source is able to sequentially produce said first and second complementary images.
27. (Previously Presented) The helmet of claim 15, wherein said redirecting unit comprises a wavelength sensitive reflecting device.
28. (Currently Amended) The helmet of claim 10 wherein said first and second different respective spatial regions of said reflecting unit are adjacent to each other ~~complementary images are substantially non-overlapping~~.

29. (Previously Presented) The helmet of claim 10 wherein said image source is able to sequentially produce said at least first and second complementary images.
30. (Previously Presented) The method of claim 19, wherein directing said images to said spatial regions of the reflecting unit comprises directing said images to said spatial regions of the reflecting unit based on polarization of said images.
31. (Previously Presented) The method of claim 19, wherein directing said images to said spatial regions of the reflecting unit comprises directing said images to said spatial regions of the reflecting unit based on wavelength of said images.
32. (Previously Presented) The method of claim 19 comprising sequentially producing said at least first and second complementary images.
33. (Previously Presented) The apparatus of claim 1, wherein said image source is adapted to simultaneously produce said first and second complementary images.
34. (Previously Presented) The apparatus of claim 33, wherein said image source comprises at least first and second image generating devices to produce said first and second complementary images and a combiner to combine onto said common optical axis said first and second complementary images.
35. (Previously Presented) The helmet of claim 10, wherein said image source is adapted to simultaneously produce first and second complementary images.
36. (Previously Presented) The helmet of claim 35, wherein said image source comprises at least first and second image generating devices to generate said first and second complementary images and a combiner to combine onto said common optical axis said first and second complementary images.
37. (Previously Presented) The method of claim 19, wherein said producing comprises simultaneously producing said first and second complementary images.
38. (Previously Presented) The method of claim 37, wherein said simultaneously producing said first and second complementary images comprises:

generating said first and second complementary images; and

APPLICANT(S): YONA, Zvi et al.
SERIAL NO.: 09/818,575
FILED: March 28, 2001
Page 7

combining said first and second complementary images onto said common optical axis.